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Lifts of Poisson structures to Weil bundle

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Abstract

In the present paper, we study complete and vertical lifts of tensor fields from a smooth manifold M to its Weil bundle T AM defined by a Frobenius Weil algebra A. For a Poisson manifold (M, w), we show that the complete lift w C and the vertical lift w V of the Poisson tensor w are Poisson tensors on T AM and establish their properties. We prove that the complete and the vertical lifts induce homomorphisms of the Poisson cohomology spaces. We compute the modular classes of the lifts of Poisson structures. © 2012 Pleiades Publishing, Ltd.

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Keywords

complete lift, Frobenius algebra, modular class, Poisson structure, vertical lift, Weil algebra, Weil bundle